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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/820,057 03/18/97 TURNER

C 109026-0038

EXAMINER

WM02/1212

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LEWIS, D

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 12/12/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
08/820,057

Applicant(s)  
Turner et al.

Examiner  
David L Lewis

Group Art Unit  
2778



☒ Responsive to communication(s) filed on Sep 21, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-28 and 30-34 is/are pending in the applicat

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-28 and 30-34 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. **Claims 1-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazan (5220316) in view of Pearlman et al. (5216530) and Saito (4741601).**
3. **As in claim 1, Kazan teaches** of a electronic display, column 5 lines 42-60, comprising: a first set of electrodes, figure 4 item 15; a second set of electrodes disposed in an intersecting pattern with respect to the first set of electrodes, the first and second sets of electrodes not contacting one another, figure 4 item 17; a particle based, non-emissive display, column 6 lines 9-10; and a plurality of nonlinear elements, the display and the nonlinear elements being disposed between the first and second sets of electrodes so as to electrically couple at least some electrodes of the first set with corresponding electrodes of the second set at regions of intersection, column 3 lines 42-45, wherein said electrodes and nonlinear elements are silk screen printed onto a polymer sheet in which are encapsulated tiny liquid crystal elements. **While said electronic display can broadly be interpreted**

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as a printable display by virtue of said printable electrodes and nonlinear devices, Kazan is however silent as to the encapsulated liquid crystals being printable to a substrate as well known in the art. Pearlman et al. teaches of encapsulated liquid crystals being printable to a substrate as well known in the art, by means such as silk screening, column 10 lines 22-32. The silk screen deposition method simplifies the fabrication process, reducing its cost as well known. Therefore it would have been obvious to the skilled artisan at the time of the invention to construct a nonlinear resistor control circuit and use in a liquid crystal display as taught by Kazan, with a printable liquid crystal display as taught by Pearlman et al. to reduce the fabrication costs as well known and further suggested by Kazan.

4. Further, as Amended in claim 1, Kazan does not teach of a the display and the nonlinear elements being sandwiched between the first and second electrode layers so as to electrically couple at least some electrodes of the first layer with corresponding electrodes of the second layer at regions of intersection. However Kazan teaches that his invention is intended to embrace many alternatives, modifications and variations falling within the scope of his inventive concept. As taught by Saito, figure 1, column 2 lines 25-60, a conventional nonlinear device for driving a liquid crystal display can be fabricated by semiconductor techniques wherein the nonlinear devices is placed between the two electrodes of a display. While silk screen printing of the electrodes and the nonlinear devices onto a base substrate may be considered a cost effective improvement of fabricating

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nonlinear devices with encapsulated LCD's, the conventional relationship of the nonlinear device, as positioned between two electrode does not have to be abandoned. As an alternative embodiment to Kazan it would have been obvious for the skilled artisan to position the nonlinear devices being sandwiched between the first and second electrode layers, as found in conventional arrangements because Kazan suggests alternative embodiments within the scope of his invention. Such a modification is well within the scope of the display as taught by Kazan because it models a configuration well know in the art and would have been obvious to the skilled artisan, **as found in the amended claim 1.**

5. As in **claim 2**, Kazan teaches wherein the non-emmissive display is an electrophoretic display, column 6 lines 44-60. As in **claim 3**, Kazan wherein non-emmissive display is a rotating ball display wherein column 6 lines 9-10, wherein said microencapsulated displays are known to be of the rotating ball type. As in **claim 4**, Kazan teaches wherein the non-emmissive display is an electrostatic display, column 6 lines 44-60, wherein electrostatic broadly reads on any microencapsulated electrophoretic display. As in **claim 5**, Kazan teaches of a thin, flexible substrate, column 2 lines 55-59, wherein thin plastic is flexible. As in **claim 6** Kazan teaches wherein the first set being orthogonal to the electrodes of the second set, figure 4. As in **claim 7** Kazan teaches wherein the electrophoretic display material and the nonlinear elements are arranged I planar form and sandwiched between the first and second sets of electrodes, column 5 lines 43-68. As in **claim 8** Kazan teaches wherein the

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electrophoretic display comprises a plurality of discrete, microencapsulated electrophoretic display elements, column 3 lines 1-10. As in **claim 10** Kazan teaches wherein the first and second sets of electrodes are printable, at least one of the sets of electrodes being visually transparent, column 5 lines 43-68. As in **claim 11** Kazan teaches wherein the nonlinear elements are printable, column 5 lines 43-68. As in **claim 13** Kazan teaches wherein the nonlinear elements are a print deposited ink exhibiting a nonlinear electrical characteristic, column 5 lines 43-68, wherein silk screening as well known deposits ink, said nonlinear characteristic being inherent to the silk screen deposited nonlinear element. As in **claim 24** Kazan teaches wherein the electrodes comprise a print deposited conductive ink, column 5 lines 43-68, wherein said silk screening deposition method of the electrodes, inherently includes conductive ink by virtue of electrode function. As in **claim 28** Kazan teaches wherein each set of electrodes is arranged in lanes with spaces therebetween, and further comprising an insulating material located in the spaces, figure 4 item 15, 17, and 30A, column 5 lines 43-68. As in **claims 33 and 34** Kazan teaches of silicon films and polymer conductors, column 4 lines 54-68, column 5 lines 1-25.

6. As in **claims 30-32**, Kazan in view of Pearlman et al. and Saito teaches of the invention as applied to claim 1 above. However Kazan does not detail a variety of well known nonlinear elements. However it would be obvious to the skilled artisan at the time of the invention that nonlinear elements include diodes and varistors in general.

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7. As in **claims 14-23 and 25** Kazan in view of Pearlman et al. and Saito teaches of the invention as applied to claim 1 above. Further Kazan teaches of the nonlinear resistor elements are composed of semiconducting or conducting powder particles bonded together with an insulating or semiconducting binder, column 3 lines 5-11, which are fabricated by silk screening or other thick film deposition methods, column 5 lines 43-68. However Kazan does not detail the variety of well known ink constitutes. It would have been obvious to the skilled artisan at the time of the invention to utilize an ink comprising well known binder and particle constituents for the purposes of silk screen fabricating the nonlinear elements to be used in the silk screening deposition method because particles bonded together with a binder are suggested by Kazan for use in a Liquid Crystal Display. It would further be obvious to utilize various particles and binder constituents well known in the art, as found in claims 14-23 and 25.
8. As in **claim 9**, Pearlman et al. teaches of containers (capsules) of varying sizes, column 4 lines 3-10, column 16 lines 44-50, as well known in the art. As in **claim 12**, Pearlman et al. teaches wherein the electrophoretic display is printable, column 10 lines 22-32. As in **claim 26**, Kazan teaches wherein the ink is transparent, which is inherent to said electrodes being transparent. As in **claim 27**, Pearlman et al. teaches of indium tin oxide, column 9 lines 35-41.

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***Response to Arguments***

9. Applicant's arguments with respect to claims 1-28 and 30-34 have been considered but are moot in view of the new ground(s) of rejection. Saito teaches of a non-linear device for driving a liquid crystal display, wherein the non-linear device is sandwiched between two electrode layers, as fabricated by conventional semiconductor techniques. Wherein it would have been obvious for a skilled artisan to fabricate a silk-screen deposited configuration of the display as taught by Kazan in view of Pearlman, but modeled on the conventional configuration as taught by Saito, with the non-linear device sandwiched between the two electrode layers, because the configuration is known.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is (703) 306-3026. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are



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Applicant: Jacobson et al.

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unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on (703) 305-4938. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**Or faxed to:**

(703) 308-9051, (for formal communications intended for entry)

**Or:**

(703) 308-6606 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

**Or hand-delivered to:**

Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).



BIPIN SHALWALA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2700

Examiner: David L. Lewis

September 27, 2000